Global Hawk Program

Integrity - Service - Excellence

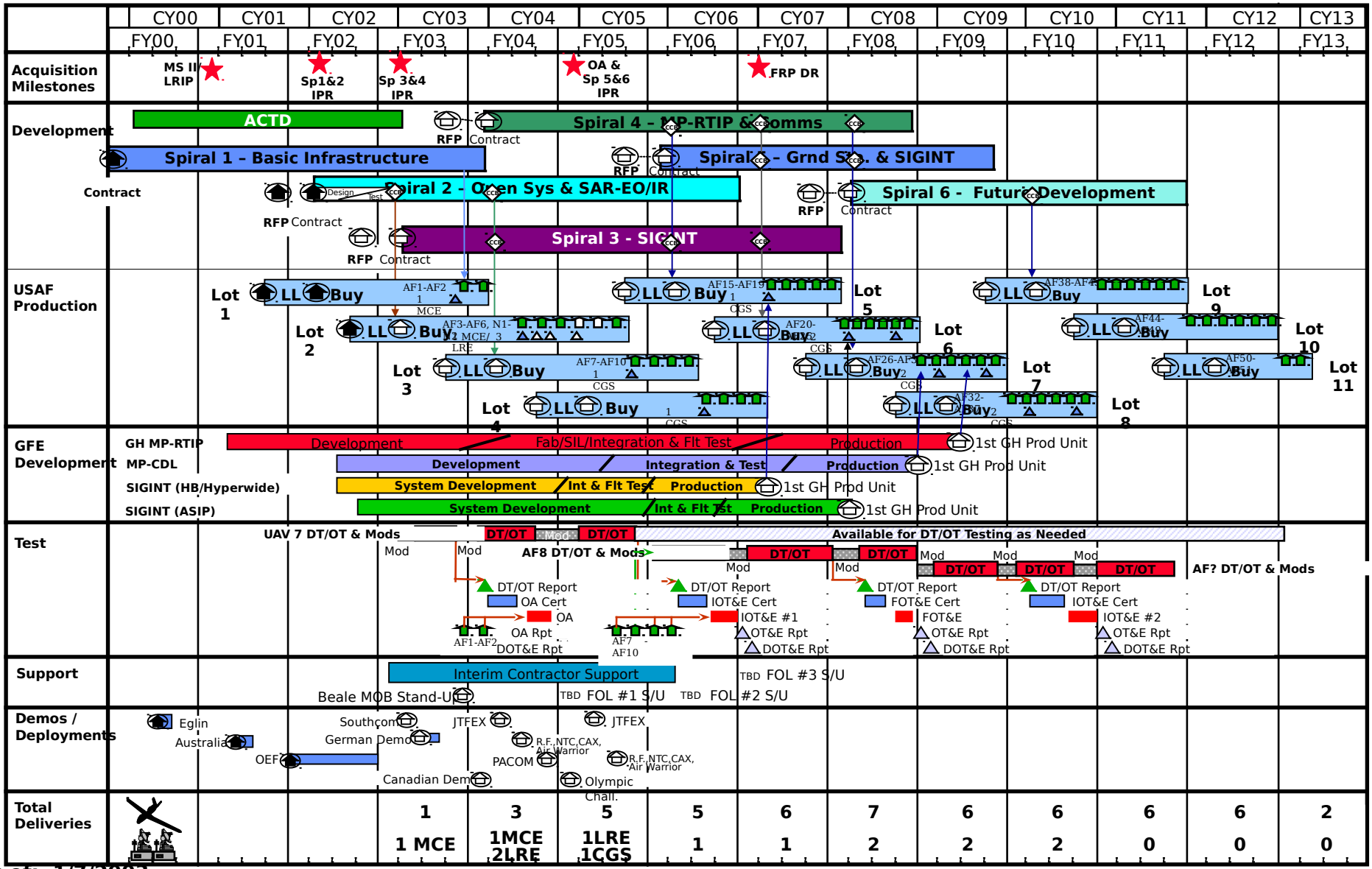
Global Hawk Program Roadmap

U.S. AIR FORCE

Jan 2003

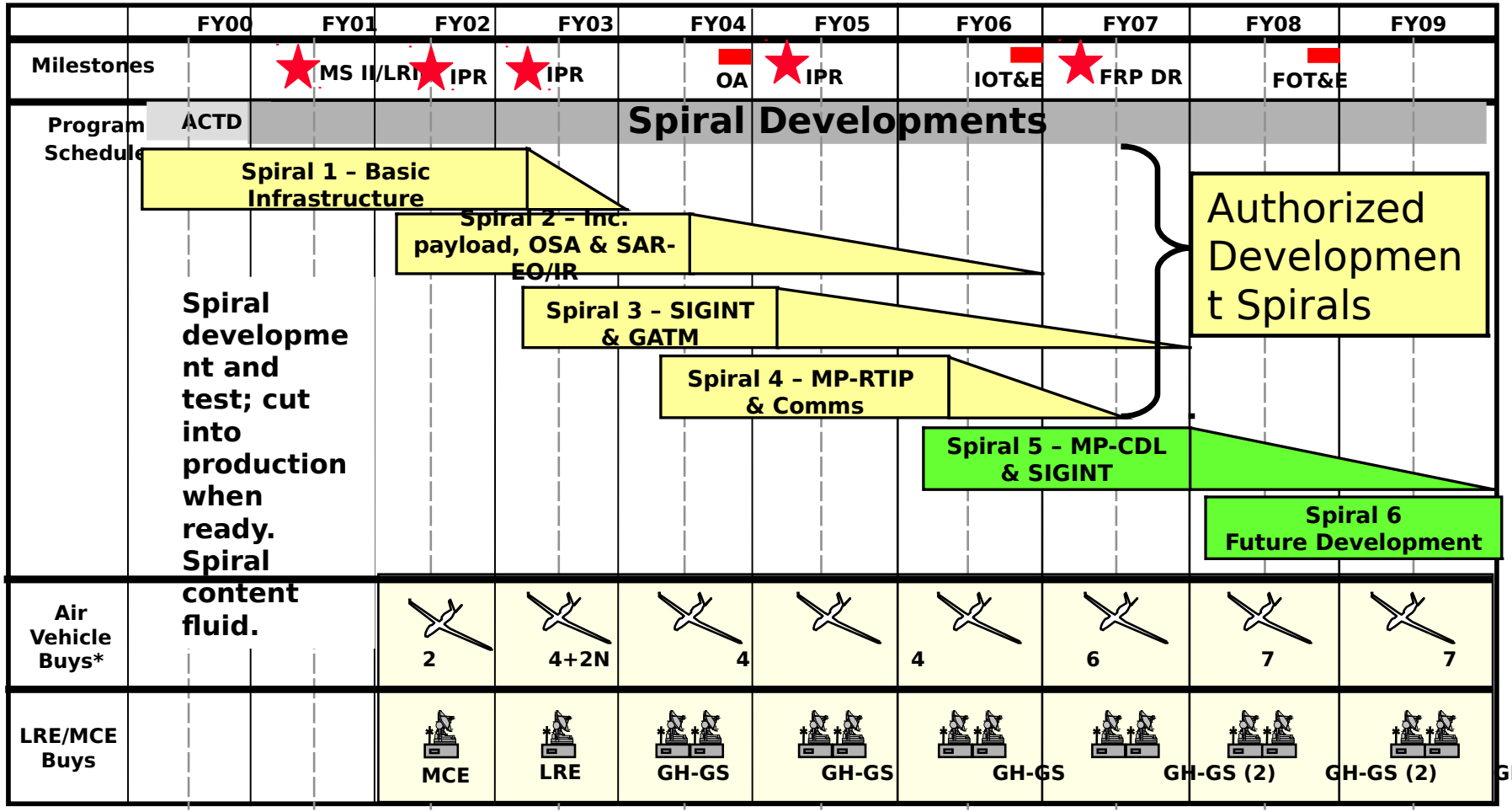
PBD 604 Impacts Evaluated

Global Hawk Program Roadmap



As of: 1/7/2003

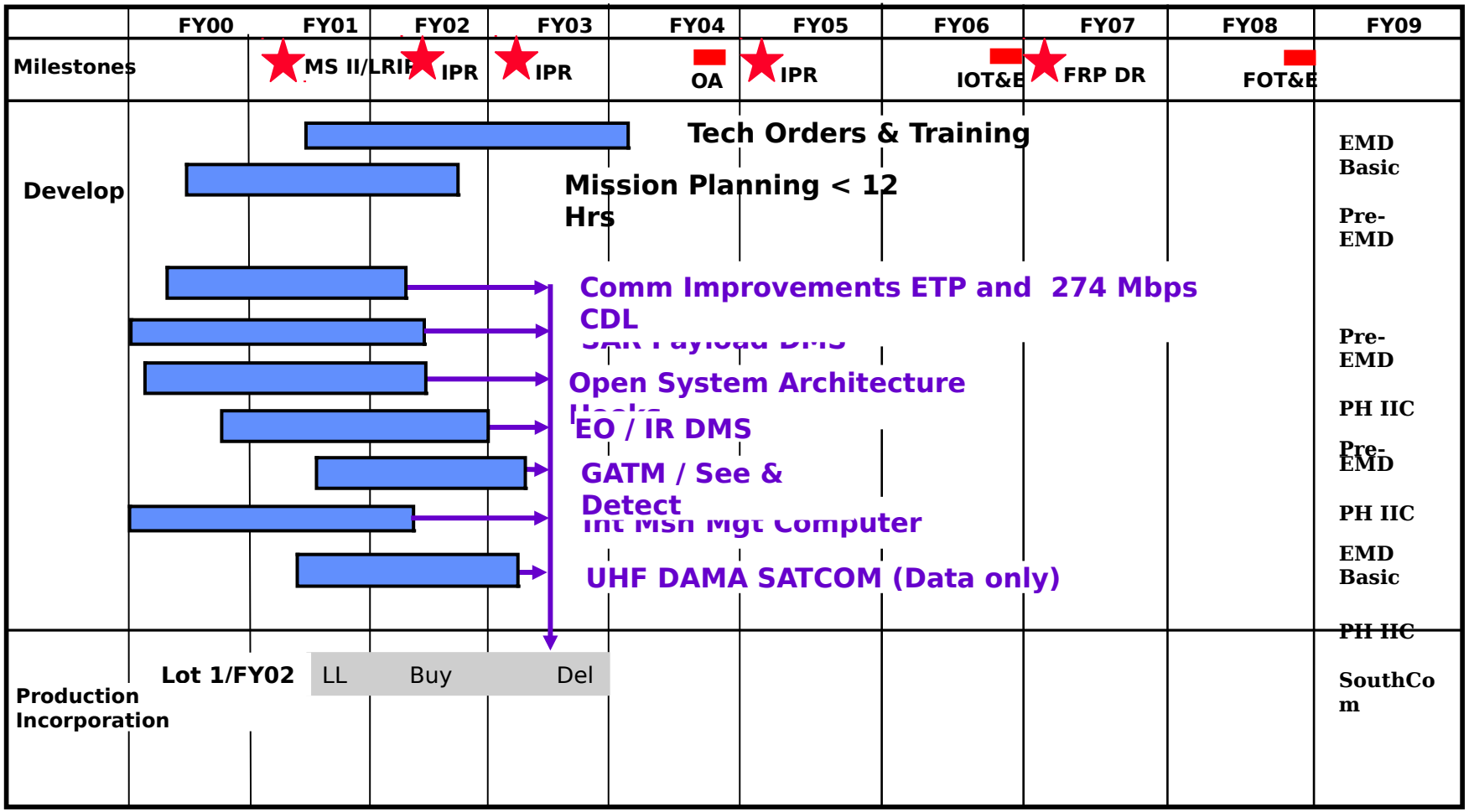
Baseline Program



* Buy profile from FY04 PB

As of: 1/7/2003

Spiral 1

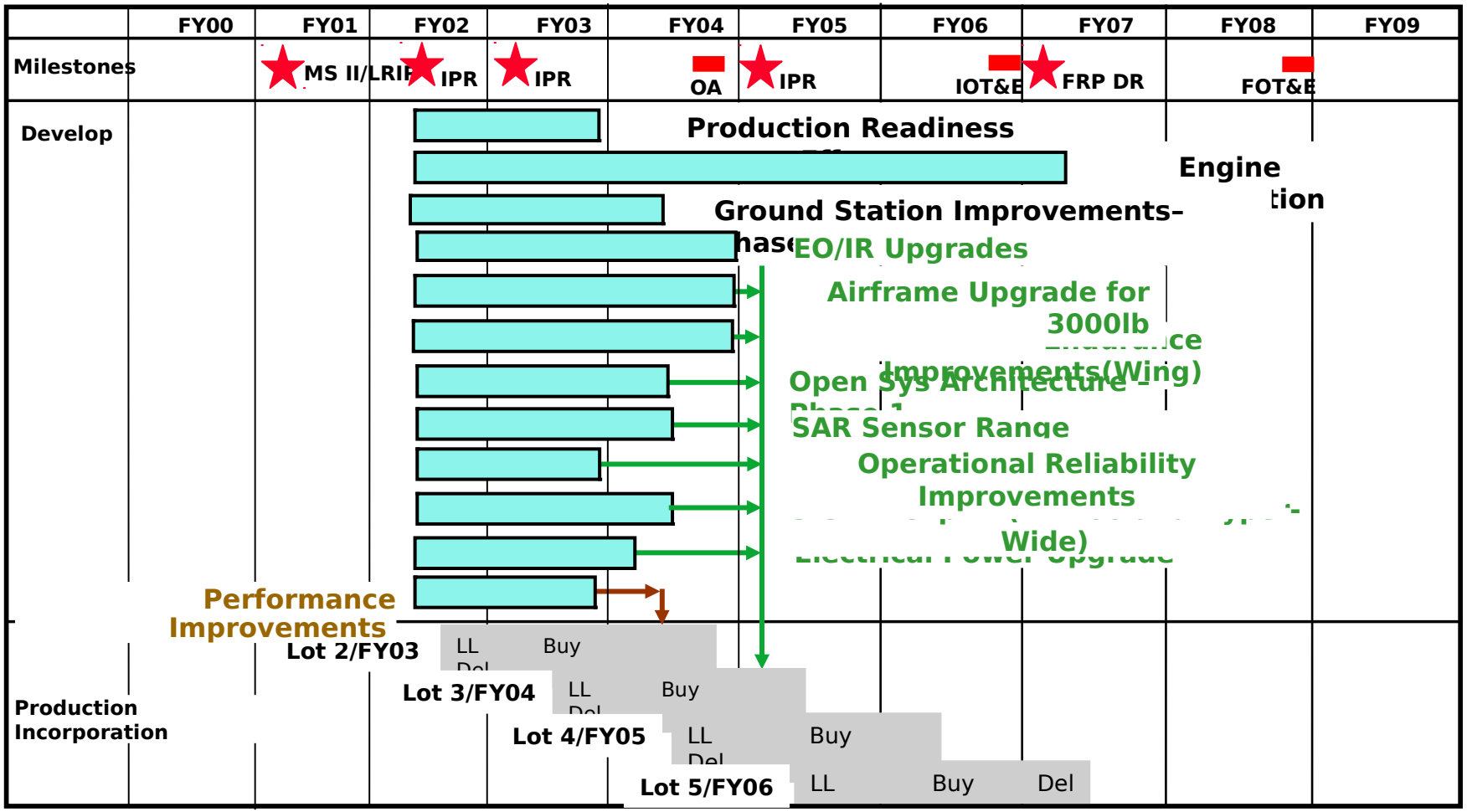


As of: 1/7/2003

Spiral 1

- **Integrated Mission Management Computer**
- **Communications Improvements**
  - **ETP**
  - **274 Mbps CDL**
- **SAR & EO/IR Payload – DMS**
- **Mission Planning < 12 hours**
- **Open Systems Architecture Hooks**
  - **PDCs**
  - **IMMCs**
  - **Harness changes**
- **GATM / See & Detect**
- **Tech Orders & Training**
- **UHF DAMA SATCOM (Data only, no voice communications)**

Spiral 2



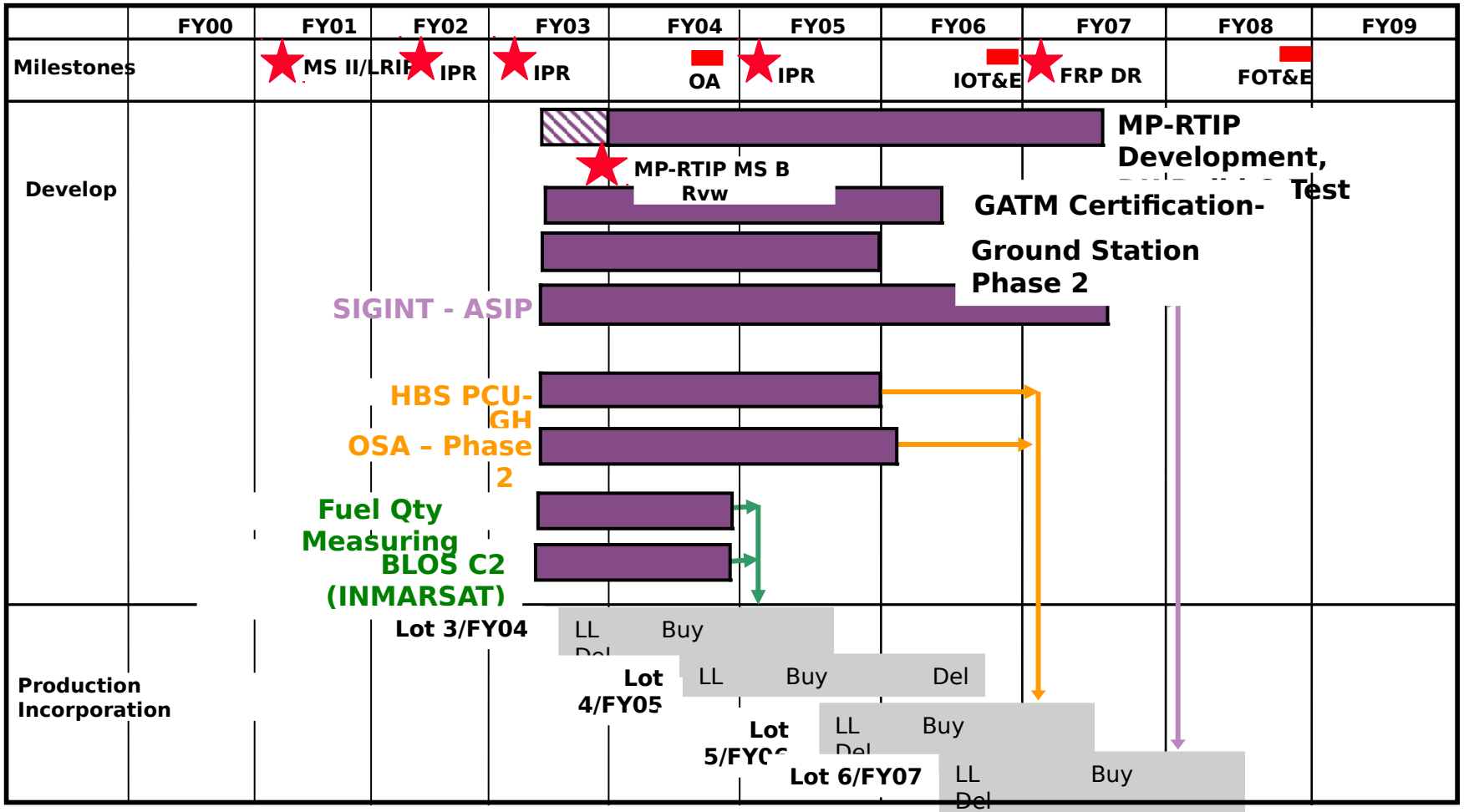
Program Office will look for opportunities to drop upgrades into production as soon as optimal

As of: 1/7/2003

Spiral 2

- **Production Readiness Efforts**
- **Tooling Improvements**
- **Performance Improvements**
  - **Increased TOGW**
  - **Constant altitude flight mode**
  - **Airframe endurance study**
- **Open Systems Architecture – Phase 1**
- **EO/IR Upgrade**
- **Ground Station Improvements – Phase 1**
- **SAR Range Improvements**
- **Operational Reliability Improvements**
  - **Rain intrusion**
  - **Reliability & Safety analysis**
- **Certification**
  - **GATM study**
  - **Airworthiness**
- **SIGINT (LR-100/Hyper-Wide)**
- **Airframe Upgrade to 3000 lb.**
- **Electrical Power Upgrade**
- **Endurance Improvements**
  - **Wing redesign**
- **DMS**
- **Engine Qualification**

Spiral 3



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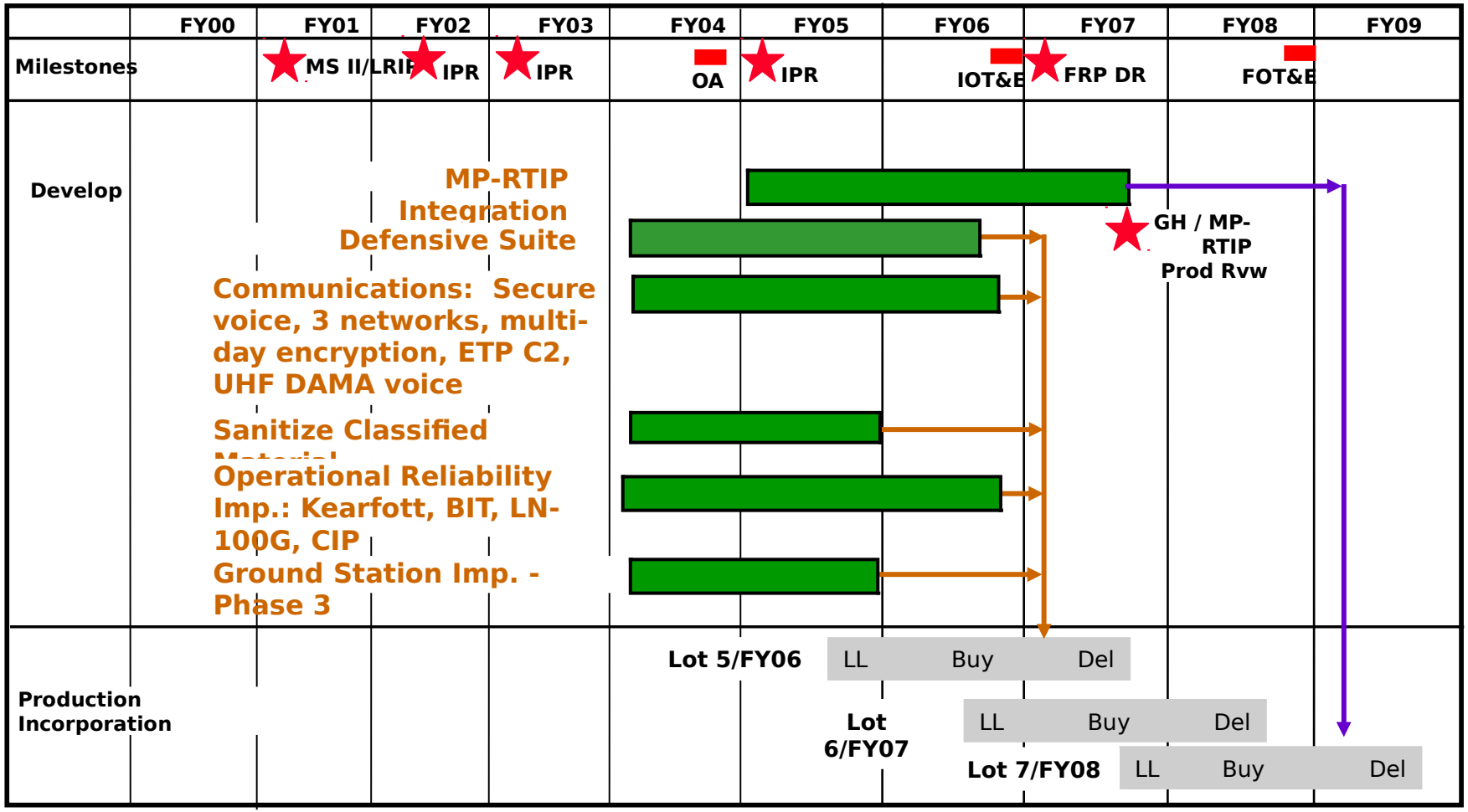
Spiral 3 Content

- **MP-RTIP Development and [DU Build & Test]***
  - ***Develops an MP-RTIP configuration for GH, builds and tests development units***
  - ****Contingent upon successful MP-RTIP Milestone "B" DAB***
- **SIGINT – High Band System Production Configuration Unit – Global Hawk (HBS PCU-GH) – delivers PCU**
  - ***Redesigns the TRW HBSS and integrates it with the GH Hyperwide system, includes delivery of a test unit***
- **SIGINT – Airborne Signals Intelligence Payload (ASIP)**
  - ***Incorporates low band capability into the SWaP constrained SIGINT architecture and delivers a test unit***
- **Open Systems Architecture – Phase 2**
  - ***Includes separation of flight critical functions, mods for direct sensor control, interfaces for future payloads, and multi-level security***

Spiral 3 Content (cont'd)

- **GATM Certification - All**
  - ***Includes studies, redesign and test to complete the certification process***
- **Ground Station Improvements – Phase 2**
  - ***Continues mission planning enhancements, some Grd Station OSA initiatives, DMS, etc.***
- **Fuel Quantity Measurement**
- **BLOS C2 (INMARSAT)**
  - ***Productionizes and installs a baseline command and control unit capability***
- **Spiral 4 Content Studies**

Spiral 4



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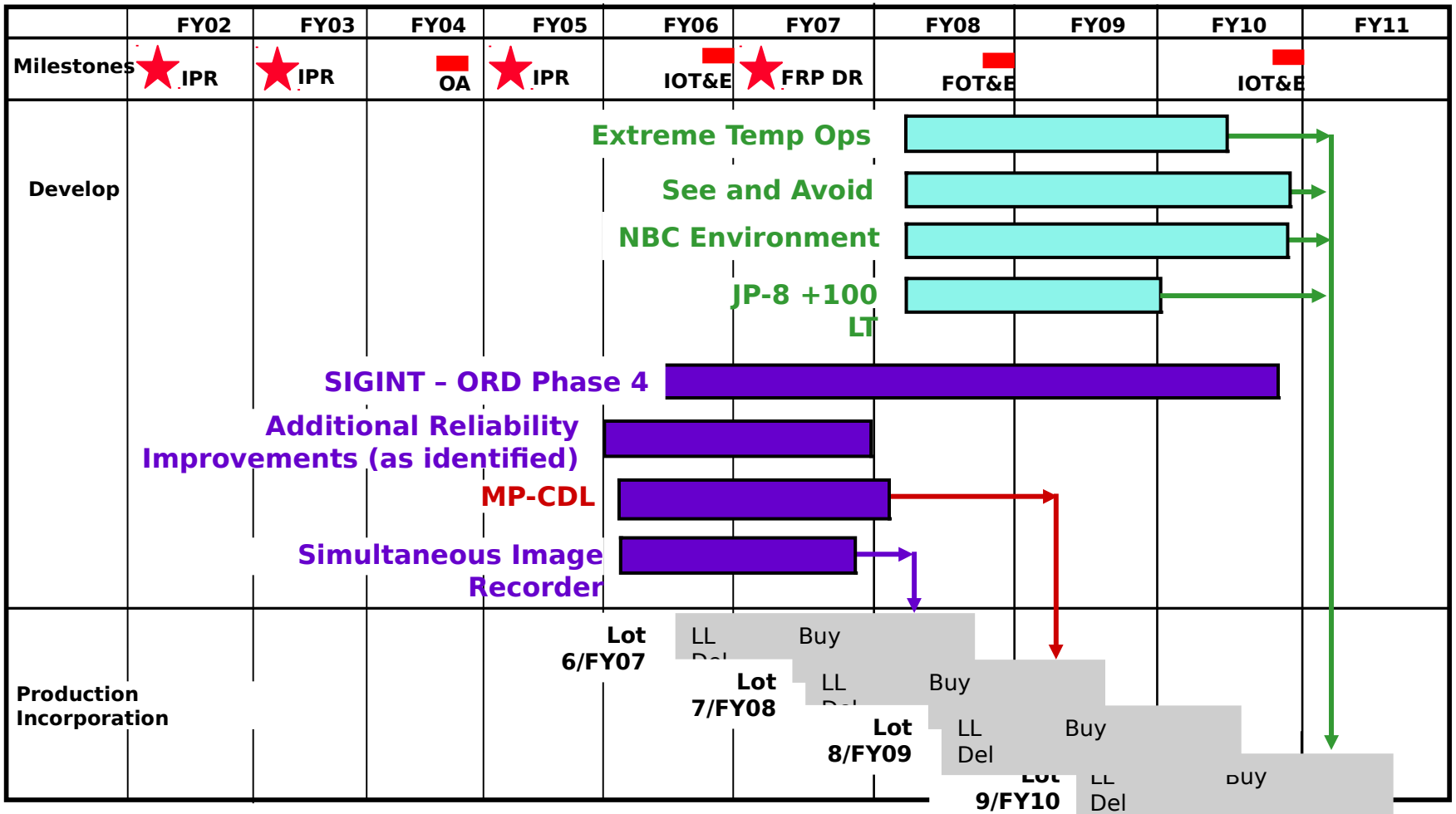
Spiral 4 Content

- **MP-RTIP – Integration**
- **Communications**
  - **UHF DAMA SATCOM (Voice):** ***Adds voice to the existing UHF DAMA SATCOM capability***
  - **Secure voice:** ***Will add the ability to switch between secure and non-secure voice communications***
  - **Multi-day encryption**
  - **ETP C2:** ***Adds aircraft and sensor control to existing ETP data capability***
  - **3 networks:** ***Increases radios to three total to facilitate secure and non-secure voice transmission & reception***
- **Additional Ground Station Improvements**
  - ***Updates mission planning capability, aligns ground station capabilities with new sensors and data links, etc.***
- **Defensive Suite**
  - ***Develops a capability to detect and identify threats (radar warning receiver), and adds discrete maneuver capability with MCE over-ride***

Spiral 4 Content (cont'd)

- **Sanitize Classified Material**
  - ***Strips classified material from all functions of the AV in the event of AV loss***
- **Operational Reliability Improvements**
  - **Improved BIT:** ***Fault detection / isolation***
  - **Common Image Processor (CIP):** ***Solves DMS problems while enabling any airborne recon ground system to receive data from any GH sensor***
  - **LN-100G IMU integrated flight management:** ***Upgrades the Inertial Measuring Unit to improve geo-location accuracy and navigation redundancy***
  - **Kearfott in-air alignment:** ***Enables the use of a flight reference system to perform in-air realignment for improved navigation accuracy***
- **Future Spiral Content Studies**

Future Spirals



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Future Spiral Content

Spiral 5:

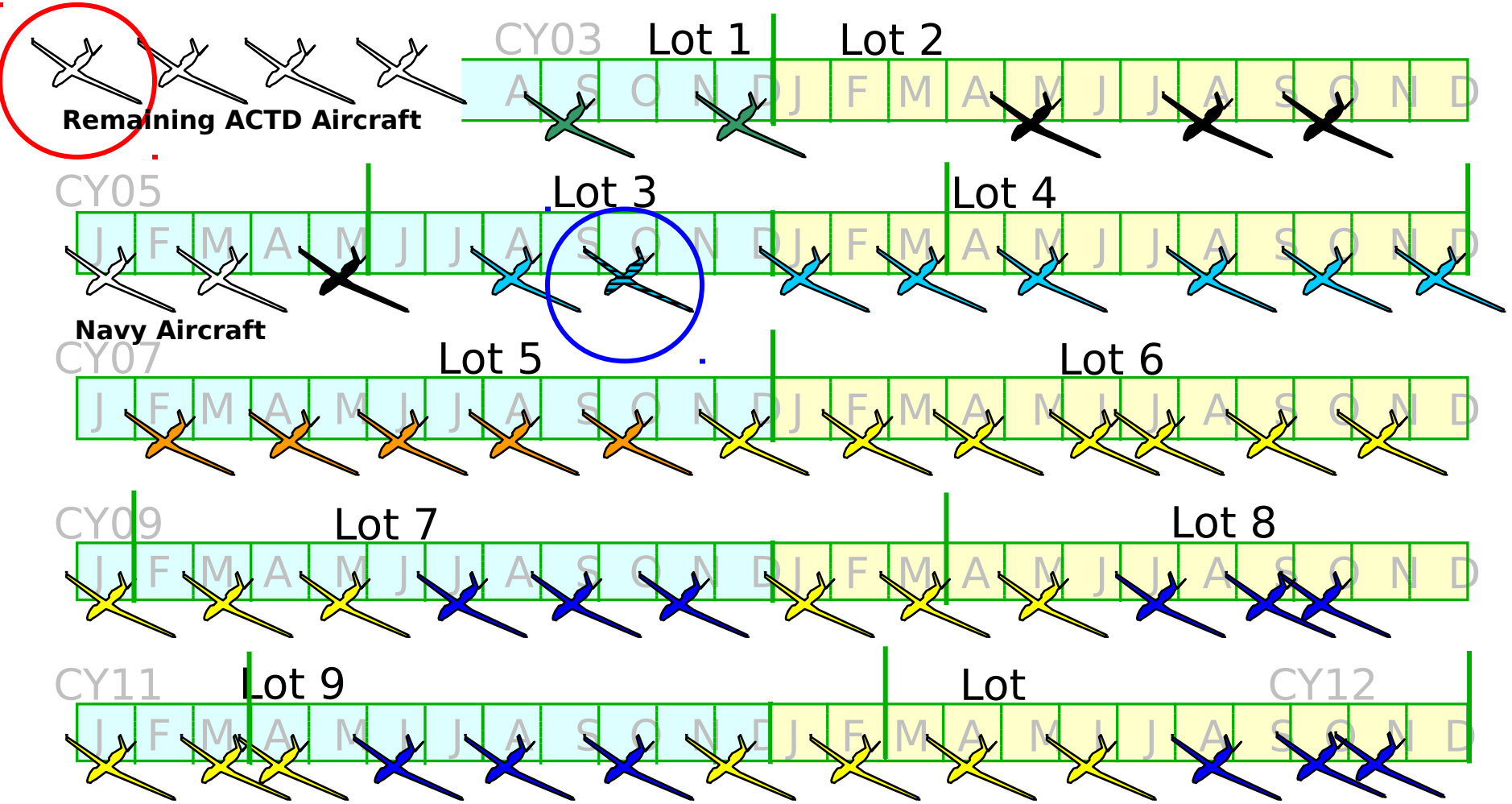
- SIGINT ORD Phase 4 (Post-ASIP--new signals)
- MP-CDL (synchs us up with other MP-CDL customers)
- Simultaneous Image Recorder (priority 30)
- Additional reliability improvements (as identified)

Spiral 6:

- See and avoid (requires study, technology, implementation recommendation)
- NBC environment (requires study, implementation recommendation)
- JP-8+100LT (priority 28)
- Extreme temperature operations (no rank number given)
- De-modify the DT AV, return to fleet

Air Vehicle/Sensor Deliveries

(Draft FY04 PB Position)


Remaining ACTD Aircraft
CY03
Lot 1
Lot 2
A S O N D J F M A M J J A S O N D
CY05
Lot 3
Lot 4
J F M A M J J A S O N D J F M A M J J A S O N D
Navy Aircraft
CY07
Lot 5
Lot 6
J F M A M J J A S O N D J F M A M J J A S O N D
CY09
Lot 7
Lot 8
J F M A M J J A S O N D J F M A M J J A S O N D
CY11
Lot 9
Lot
CY12
J F M A M J J A S O N D J F M A M J J A S O N D
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SAR only Filled with ERU later
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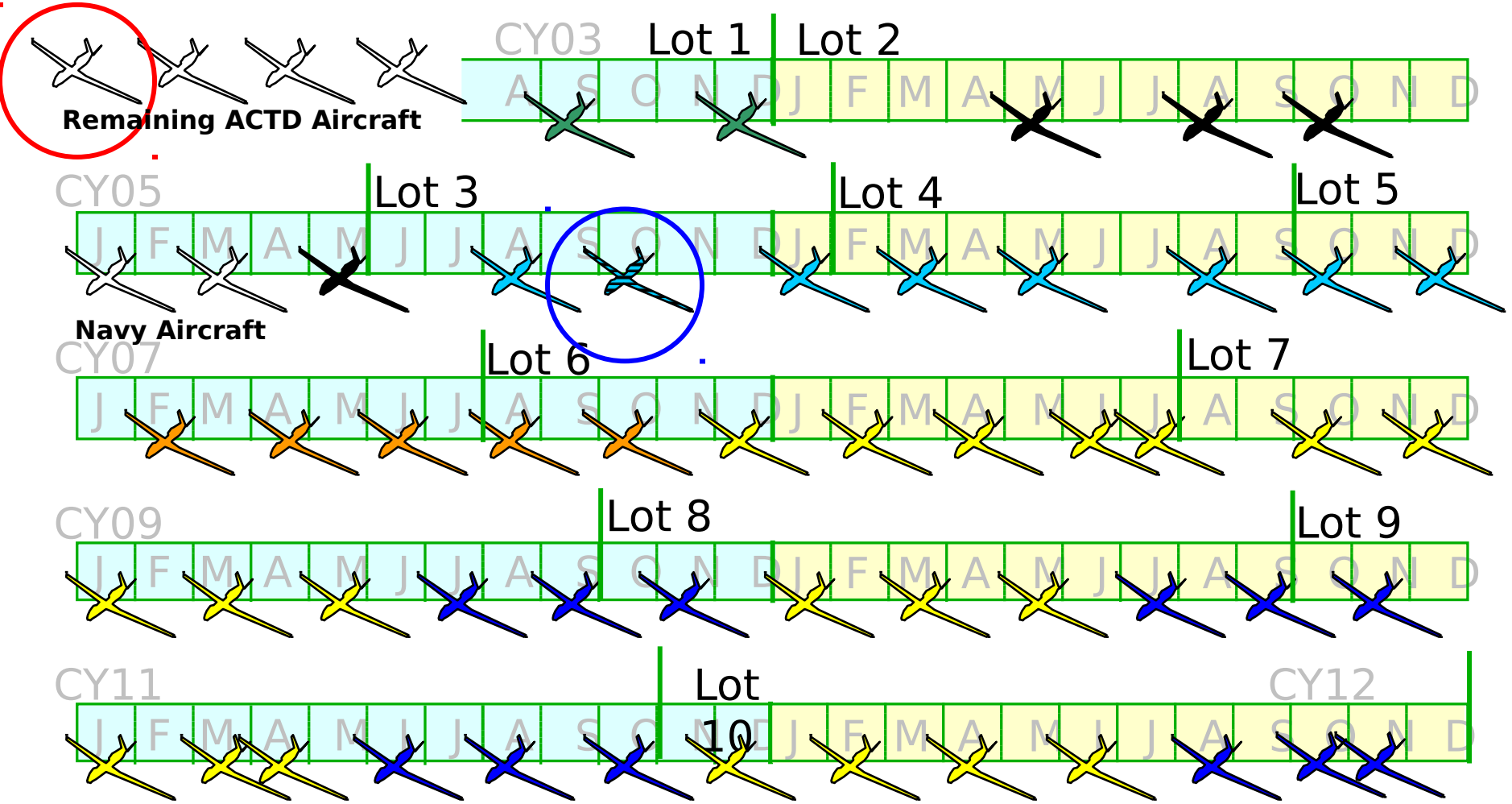
MP-RTIP

Air Vehicle/Sensor Deliveries

(Draft PBD 604 Impact)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Air Vehicle/Sensor Deliveries

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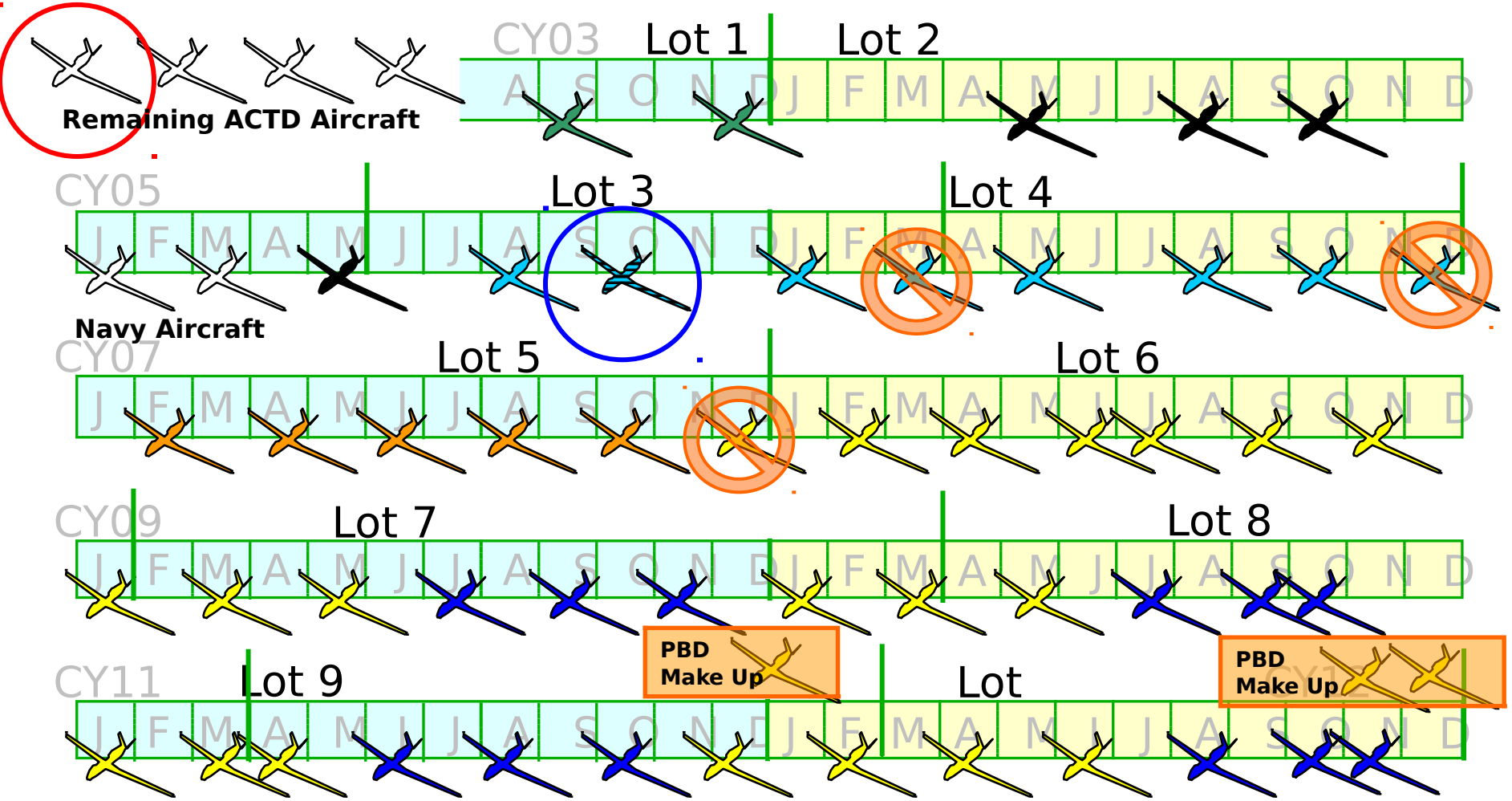
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As of: 1/7/2003

Spiral Matrix

EMD EFFORT	Period of Perf		EFFECTIVITY DATE (Production Lot#, AV#, Buy FY, Delivery Start FY)									
	Start	END	Lot 1 AF 1-3 FY02 Buy FY03 Del	Lot 2 AF 4-6 FY03 Buy FY04 Del	Lot 3 AF 7-10 FY04 Buy FY05 Del	Lot 4 AF 11-14 FY05 Buy FY06 Del	Lot 5 AF 15-19 FY06 Buy FY07 Del	Lot 6 AF 20-26 FY07 Buy FY08 Del	Lot 7 AF 27-33 FY08 Buy FY09 Del	Lot 8 AF 34-39 FY09 Buy FY10 Del	Lot 9 AF 40-45 FY10 Buy FY11 Del	Lot 10 AF 46-51 FY11 Buy FY12 Del
SPIRAL 1 EMD												
Tech Orders & Training	FY01	FY04	X	X	X	X	X	X	X	X	X	X
Comm Improvements ETP and 274 Mbps CDL	FY00	FY02	X	X	X	X	X	X	X	X	X	X
SAR Payload DMS	FY00	FY02	X	X	X	X	X		X	X	X	X
Mission Planning <12hrs	FY00	FY02	X	X	X	X	X	X	X	X	X	X
Open System Architecture Hooks	FY00	FY02	X	X	X	X	X	X	X	X	X	X
EO / IR DMS	FY00	FY02	X	X	X	X	X	X	X	X	X	X
GATM / See & Detect	FY01	FY03	X	X	X	X	X	X	X	X	X	X
Int Msn Mgt Computer	FY00	FY02	X	X	X	X	X	X	X	X	X	X
UHF DAMA SATCOM (Data only)	FY01	FY03	X	X	X	X	X	X	X	X	X	X
SPIRAL 2 EMD												
Operational Reliability Impv/Analysis	FY02	FY03			X	X	X	X	X	X	X	X
Performance Impv	FY02	FY02		X	X	X	X	X	X	X	X	X
DMS	FY02	FY03		X	X	X	X	X	X	X	X	X
Power Upgrade (25Kva)	FY02	FY04			X	X	X	X	X	X	X	X
SAR Range Improvements	FY02	FY04			X	X	X	X	X	X	X	X
Sensor Clip-In (LR100 and Hper Wide)	FY02	FY03			X	X	HBS PCU-GH replaces Clip-In					
Ground Station - Phase 1	FY02	FY03			X	X	X	X	X	X	X	X
EO/IR Upgrades	FY02	FY05			X	X	X	X	X	X	X	X
OSA - Phase 1	FY02	FY04			X	X	X	X	X	X	X	X
Airframe Upgrade to 30001b	FY02	FY04			X	X	X	X	X	X	X	X
Endurance Improvement (Wing redesign)	FY02	FY05			X	X	X	X	X	X	X	X

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	Start	END	Lot 1 AF 1-3 FY02 Buy FY03 Del	Lot 2 AF 4-6 FY03 Buy FY04 Del	Lot 3 AF 7-10 FY04 Buy FY05 Del	Lot 4 AF 11-14 FY05 Buy FY06 Del	Lot 5 AF 15-19 FY06 Buy FY07 Del	Lot 6 AF 20-26 FY07 Buy FY08 Del	Lot 7 AF 27-33 FY08 Buy FY09 Del	Lot 8 AF 34-39 FY09 Buy FY10 Del	Lot 9 AF 40-45 FY10 Buy FY11 Del	Lot 10 AF 46-51 FY11 Buy FY12 Del
SPIRAL 3 EMD												
SIGINT HBS PCU-GH	FY03	FY05					X	SIGINT-ASIP replaces HBS PCU-GH				
SIGINT Abn Signals Intelligence Payload	FY03	FY06						X	X	X	X	X
OSA - Phase 2	FY03	FY06					X	X	X	X	X	X
GATM Certification-All tasks	FY03	FY06			X	X	X	X	X	X	X	X
Ground Station Improvements-Phase 2	FY03	FY05										
Fuel Quantity Measurement	FY03	FY05			X	X	X	X	X	X	X	X
BLOS C2 (INMARSAT)	FY03	FY04			X	X	X	X	X	X	X	X
MP-RTIP Dev, DU Build & Test (ESC task)	FY03	FY07	MP-RTIP integrated into GH in Spiral 4									
SORAP	FY03	FY03	No production drop-in									
SPIRAL 4 EMD												
Production Readiness Efforts	FY04	FY05					X	X	X	X	X	X
Defensive Suite	FY04	FY06					X	X	X	X	X	X
Comms - Secure, 3 Networks, ETP, DAMA, etc.	FY04	FY06					X	X	X	X	X	X
Sanitize Classified Material	FY04	FY05					X	X	X	X	X	X
Operational Reliability Impv-BIT, CIP, etc.	FY04	FY06					X	X	X	X	X	X
Ground Station - Phase 3	FY04	FY05					X	X	X	X	X	X
MP-RTIP Integration	FY04	FY07							X	X	X	X
SPIRAL 5 EMD												
Simultaneous Image Recorder	FY05	FY07						X	X	X	X	X
MP-CDL Development & Ingetration	FY05	FY07							X	X	X	X
Additional Reliability Improvements	FY06	FY07	As identified in future ORD updates and operational experience									
SIGINT-ORD Phase 4	FY06	FY10	As determined by future ORD update									
SPIRAL 6 EMD												
Engine Impv (JP-8 100+LT fuel)	FY08	FY09									X	X
See-and-Avoid	FY08	FY10									X	X
Extreme Temperature Operations	FY08	FY10									X	X
NBC Environment	FY08	FY10									X	X

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